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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,562	09/27/2006	Tunenobu Kimoto	29588SUS3PCT	4707
22850	7590	09/16/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
CHANDRA, SATISH				
ART UNIT		PAPER NUMBER		
1792				
NOTIFICATION DATE		DELIVERY MODE		
09/16/2008		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/594,562

**Applicant(s)**

KIMOTO ET AL.

**Examiner**

SATISH CHANDRA

**Art Unit**

1792

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 7-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/27/2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CI/CD)
- Paper No(s)/Mail Date 9/06

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/21/2008 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 7 – 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kong et al (US 6,217,662) in view of Naoya (JP 11-176757) and Greenwald (US 5,104,690).**

**.Kong et al discloses:**

**Regarding Claim 7,** a susceptor (42 in Fig. 2, 50 in Fig.6) that is used in semiconductor epitaxial growth ( Figs 1, 2, 4, 6, 7), comprising: a barrel type susceptor (42 in Fig. 2, 50 in Fig.6) having a plurality of surfaces (43 in Fig.2, 55 in Fig. 7) on an outer side of each of which a plurality of substrates (Fig. 2, plurality of wafer pockets 44

for holding the substrates, 56, wafer pockets in Fig.7 and Fig. 1 shows disc shaped wafers (27)) are freely disposed. Wafers 27 are also held on the susceptor 26 (Fig 1).

**Regarding Claims 8 and 13**, each of surfaces on a side of the barrel type susceptor of the member allows placing a plurality of substrates (see Fig. 2, plurality of wafer pockets 44 for holding the substrates, 56, wafer pockets in Fig.7 and Fig. 1 shows disc shaped wafers (27))

**Regarding Claims 9 and 14**, either one or both of the barrel type susceptor and the member are a heater (46) (Col. 5, lines 63 – 67; Col. 6, Line 5 - 9).

**Regarding Claims 10 and 15**, the susceptor is made of a base material containing graphite (Col. 6, Line 10-24).

**Regarding Claims 11 and 16**, the susceptor is covered with polycrystalline silicon carbide or polycrystalline tantalum carbide (Col. 6, Line 10-24).

**Regarding Claim 12**, a susceptor (42 in Fig. 2, 50 in Fig.6) that is used in semiconductor epitaxial growth, comprising: a barrel type susceptor (42 in Fig. 2, 50 in Fig.6) having a plurality of surfaces (43 in Fig.2, 55 in Fig. 7) on an inner side of each of which a plurality of substrates (Fig. 2, plurality of wafer pockets 44 for holding the substrates, 56, wafer pockets in Fig.7 and Fig. 1 shows disc shaped wafers (27)) is freely disposed;

**Kong et al does not teach:**

**Regarding claim 7 and 12**, a member that has the barrel type susceptor disposed therein and which has surfaces each of which are equally distanced from and

are positioned parallel to the surfaces of said barrel type susceptor and wherein the barrel type susceptor and said member comprise a heater.

**Regarding claims 17 and 18**, the susceptor is fixedly held in position within the said member.

**Naoya discloses:**

**Regarding claims 7, 12, 17 and 18**, a barrel type susceptor 32 disposed within a reactor 33 (Figs 3, 4), heaters 31 are equally distanced from and are positioned parallel to the said barrel type susceptor 32 (Fig 4). The barrel type susceptor 32 is fixedly held in position within the member (heater) 31 by a rotatable shaft 32c at the peripheral end of the reactor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a member that has the barrel type susceptor fixedly held in position within the member disposed therein and which has surfaces each of which are equally distanced from and are positioned parallel to the surfaces of said barrel type susceptor and wherein the said member comprise a heater in the apparatus of Kong et al as taught by Naoya. It would have been obvious to a skilled artisan to combine prior art elements to yield predictable results such as providing a member that has the barrel type susceptor fixedly held in position within the member disposed therein and which has surfaces each of which are equally distanced from and are positioned parallel to the surfaces of said barrel type susceptor and wherein the said member comprise a heater in the apparatus of Kong et al as taught by Naoya.

The motivation for providing a member that has the barrel type susceptor fixedly held in position within the member disposed therein and which has surfaces each of which are equally distanced from and are positioned parallel to the surfaces of said barrel type susceptor and wherein the said member comprise a heater in the apparatus of Kong et al is to optimize the apparatus of Kong et al to form a uniform layer of film on the substrates. Further it has been held where the only difference between the prior art and the claims is a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device is not patentably distinct from the prior art device. In Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984).

**Kong et al and Naoya do not disclose:**

**Regarding claims 7 and 12**, the barrel type susceptor comprises a heater.

**Greenwald discloses:** a CVD apparatus wherein the susceptor (Fig 1) comprises a heater (not labeled).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a susceptor comprising a heater in the apparatus of Kong et al and Naoya as taught by Greenwald. It would have been obvious to a skilled artisan to combine the elements of prior art to yield predictable results such as providing a susceptor comprising a heater in the apparatus of Kong et al and Naoya as taught by Greenwald.

The motivation for providing a susceptor comprising a heater in the apparatus of Kong et al and Naoya is to provide an alternate and equivalent heating source for heating a susceptor in the apparatus of Kong et al and Naoya as taught by Greenwald.

**Claims 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kong et al (US 6,217,662) in view of Naoya (JP 11-176757) and Greenwald (US 5,104,690) as discussed in claims 7 – 18 above and further in view of Naoya (JP 11-176757).**

**Kong et al, Naoya and Greenwald were discussed above.**

**Naoya further discloses:** a barrel type susceptor 32 disposed within a reactor 33 (Figs 3, 4), heaters 31 are equally distanced from and are positioned parallel to the said barrel type susceptor 32 (Fig 4). The distance between surfaces of the plurality of substrates 20 (not labeled in Fig 4) disposed on the susceptor 32 and the surfaces of the member (heater) 31 is maintained substantially equidistant from one another and said surfaces of the members (heaters) are maintained parallel to the surfaces of the barrel type susceptor.

**Claims 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kong et al (US 6,217,662) in view of Naoya (JP 11-176757) and Greenwald (US 5,104,690) as discussed in claims 7 – 18 above and further in view of Drimer (US 6,157,003).**

**Kong et al, Naoya and Greenwald do not disclose:**

**Regarding claims 20 and 22,** susceptor further comprising a heat insulating material positioned outside the susceptor.

**Drimer discloses:** a processing apparatus for processing semiconductor wafers (Fig 1A) wherein an insulating enclosure 19 is positioned outside the susceptor and surrounds the furnace (apparatus).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an insulating enclosure outside the susceptor in the apparatus of Kong et al, Naoya and Greenwald as taught by Drimer. It would have been obvious to a skilled artisan to combine the elements of prior art to yield predictable results such as providing an insulating enclosure outside the susceptor in the apparatus of Kong et al, Naoya and Greenwald as taught by Drimer.

The motivation for providing an insulating enclosure outside the susceptor in the apparatus of Kong et al, Naoya and Greenwald is to minimize heat losses in the apparatus of Kong et al, Naoya and Greenwald.

### ***Response to Arguments***

Applicant's arguments with respect to claims 7 - 22 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 4,596,208 to Wolfson et al; US 6,738,683 to Dunn; US 5,441,571 to Ohta et al; US 5,851,589 to Nakayama et al; US 4,468,283 to Ahmed; US 6,110,289 to Moore; US 5,288,364 to Burt et al..



Any inquiry concerning this communication or earlier communications from the examiner should be directed to SATISH CHANDRA whose telephone number is (571)272-3769. The examiner can normally be reached on 8 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, Primary Examiner, Jeffrie R. Lund can be reached on 571-272-1437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeffrie R. Lund/  
Primary Examiner, Art Unit 1792

Satish Chandra

Jeffrie R. Lund  
Primary Examiner

SC